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CLAIMS

We Claim:

1. A device for assembling circuit boards, said device comprising:
5 an upper surface for receiving a compressing force; and
a lower surface for compressing a plurality of compression devices
in a land grid array assembly while allowing access to a plurality of
fasteners associated with said compression devices;
wherein said device is operable to assist in the formation of an
10 electrical contact between a chip package in the land grid array assembly
and a circuit board by said lower surface being pressed against said
plurality of compression devices to compress said compression devices and
then allowing said plurality of fasteners to be tightened.
- 15 2. The device of Claim 1, wherein said lower surface is shaped to avoid
contacting a loading plate that is a part of the land grid array assembly
while compressing the plurality of compression devices to load the loading
plate.
- 20 3. The device of Claim 1, wherein said lower surface is shaped to avoid
directly loading a heat sink that is a part of the land grid array assembly
while compressing the plurality of compression devices to load the heat
sink.

4. The device of Claim 1, wherein said device has a plurality of holes running from said upper surface to said lower surface, said plurality of holes large enough to allow the plurality of fasteners to be accessed and small enough such that said lower surface is operable to compress the
5 plurality of compression devices.

5. The device of Claim 1, wherein said upper surface is shaped to provide alignment to a press ram.

10 6. The device of Claim 5, wherein said lower surface is further operable to press against a plurality of washers on top of the plurality of compression devices.

7. The device of Claim 1, wherein said lower surface is operable to
15 compress a plurality of cylindrical coil springs that are the plurality of compression devices.

8. The system of Claim 1, wherein said device has a plurality of holes running from said upper surface to said lower surface and a diameter of a
20 hole of said plurality holes is larger than an outer diameter of a nut that threads onto a threaded fixture and smaller than an outer diameter of a washer between said nut and said compression device, said nut, threaded fixture and washer forming a fastener of said plurality of fasteners.

9. A method for assembling circuit boards, comprising:

a) receiving a land grid array assembly having a chip package and a loading component on a circuit board;

b) applying a press device to compress a plurality of compression components that apply a coupling force to said loading component, wherein said loading component compresses said chip package to said circuit board;

c) while continuing to apply said press device, tightening a plurality of fasteners associated with said plurality of compression components; and

d) removing said press device from said plurality of compression components, wherein said plurality of fasteners compress said plurality of compression components.

10. The method of Claim 9, wherein said c) comprises:

c1) tightening a first fastener of said plurality of fasteners to its final torque; and

c2) repeating said c1) one fastener of said plurality of fasteners at a time for the rest of said plurality of fasteners.

11. The method of Claim 9, wherein said b) comprises applying said press device to said plurality of compression components without said press device directly to said loading component.

12. The method of Claim 9, wherein:

said press device has a plurality of holes; and

wherein said b) comprises positioning said holes over said compression components to allow access to said fasteners from above said press device.

5 13. The method of Claim 12, wherein said c) comprises tightening said plurality of fasteners by accessing said fasteners through said holes using a torque driver.

14. The method of Claim 9, wherein said b) further comprises applying
10 a force with said press device to a washer above each of said compression components.

15. The method of Claim 9, wherein said plurality of compression components comprise cylindrical coil springs.

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16. A system for assembling circuit boards, said system comprising:
a base for holding a circuit board having a land grid array assembly having a chip package, a loading component engaging the chip package, a plurality of compression components coupled to the loading component,
20 and a plurality of fasteners engaging the plurality of compression components;

a press ram for compressing the land grid array assembly to form an electrical contact between the chip package and the circuit board; and

a pre-compression device coupled to said press ram and for
25 compressing the compression components to apply a coupling force to the

loading component while allowing the fasteners to be accessed for tightening.

17. The system of Claim 16, further comprising:

5 a torque driver to tighten the plurality of fasteners while said pre-compression device is compressing the plurality of compression components, wherein said pre-compression device is removed from the compression components leaving the fasteners to apply a final compression to the compression components.

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18. The system of Claim 17, wherein said torque driver is programmed to torque a first fastener of the plurality of fasteners to its full tightness before torquing a second fastener of the plurality of fasteners to its full tightness.

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19. The system of Claim 16, wherein said pre-compression device has a plurality of holes, and wherein said holes are large enough to allow the fasteners to be tightened and small enough such that said pre-compression device is able to compress the compression components.

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20. The system of Claim 16, wherein said pre-compression device is operable to compress the compression devices thus loading the loading component without said pre-compression device applying a substantial load by direct contact to the loading component.

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21. The system of Claim 20, wherein the loading component is a loading plate.

22. The system of Claim 20, wherein the loading component is a heat
5 sink.